

R E M A R K S

This is in response to the June 8, 2006 Office Action. Claims 23, 24, 29, 30, 34, 39, 40, 50-52, 65, 67-69, 73, and 75 are pending in the application, of which claims 50-52, 65, and 69 are said to be withdrawn from consideration. Claims 50-52, 65, and 69 had previously been PASSED TO ISSUE in this application by the Examiner. No basis is seen for now withdrawing those claims from consideration.

Claims 23, 24, 29, 30, 34, 39, 40, 73, and 75 are rejected over US 5,608,183 (Barnes) in view of US 3,902,934 (Timmerman). Office Action, pages 2-3. Claims 23, 24, 29, 30, 34, 39, 40, 73, and 75 are rejected over US 5,841,065 (Mendenhall) in view of Timmerman. Office Action, pages 3-4. Claims 67, 68, and 73 are rejected over Barnes in view of Timmerman and US 5,780,767 (Matsuda) or US 6,468,369 (Zhou) or US 5,834,679 (Seeger). Office Action, page 4. Claims 67, 68, and 73 are rejected over Mendenhall in view of Timmerman in view of Matsuda or Zhou or Seeger. Office Action, pages 4-5. The rejections are respectfully traversed.

The stated reason for all of these rejections is that Timmerman allegedly teaches that if oxidizer particle size is decreased, one will obtain complete reaction of the oxidizer, and prevent unreacted particles from being ejected with the gaseous reaction products. Accordingly, the Examiner argues, it would be *prima facie* obvious to decrease the particle size of the compositions disclosed in the Barnes and Mendenhall '065 patents to sizes falling within the range of 0.5 to 40 microns recited in Applicants' claims.

There are at least two major difficulties with this combination rejection.

First, the Timmerman technology cannot be analogized to the technologies of Barnes or Mendenhall '065. The Timmerman disclosure relates to organic acid fuels and oxidizers selected from the class consisting of potassium chlorate, potassium perchlorate, sodium chlorate, and sodium perchlorate. Column 2, lines 37-39. The Timmerman technology is inconsistent with the technology of the primary references because the oxidizer in the primary references – e.g. basic copper nitrate – behaves in a manner that is significantly different from the manner in which the oxidizers of the ancillary reference (Timmerman) behave. Specifically, a basic copper nitrate and an organic acid fuel immediately react with one another and do not form any gas generating agent. Accordingly, the Examiner's purported combination of the Timmerman technology with the Barnes or Mendenhall '065 technology would change the principle of operation of the technology of these primary references. Accordingly, the proposed modification is not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (The court reversed the rejection, holding that the "suggested combination of references would require ... a change in the basic principle under which the [primary references] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.).

Second, Timmerman teaches that small oxidizer particle size increases combustion speed and promotes completion of combustion. Applicants have unexpectedly found, however, that in the context of the present technology, the recited particle size provides good *ignition*, which is different from speed or completion of *combustion*. Good combustion speed is not invariably correlated with good ignition. For instance, a composition including

nitroguanidine and basic copper nitrate has a combustion speed of about 10 mm/sec and also has good ignition properties, while a similar composition in which the nitroguanidine is replaced with guanidine nitrate has a combustion speed of about 14 mm/sec but does not have good ignition properties. Nothing in the prior art cited by the Examiner suggests that gas generating agents having good **ignition** properties can be obtained by providing therein a basic metal nitrate oxidizing agent having a particle diameter in the range 0.5-40 microns.

In summary, the ancillary Timmerman reference is not properly combined with the primary Barnes and Mendenhall '065 references because that combination would change the principle of operation of the technology of the primary references. In any event, any *prima facie* obviousness (which Applicants do not concede) is rebutted by the unexpected good **ignition** properties of the presently claimed gas generating agents.

Another item of evidence having bearing on the unexpected (with respect to the prior art) benefits provided by the present invention is the 27 September 2006 "Declaration under 37 CFR 1.132" of Dr. Jianzhou Wu which accompanies this response. Timmerman teaches that his "preferred composition of propellant comprises ... citric acid". Column 2, lines 62-64. Accordingly, Dr. Wu prepared a "gas generating agent" comprising a mixture of citric acid, a basic copper nitrate, and sodium carboxymethylcellulose. It was found that this citric acid-based composition started to decompose at 103°C. Therefore, this type of composition is not in practice useful as a gas generating agent for automobile airbags, because it decomposes under conditions to which automobiles are often subjected. As Dr. Wu points out, in the relevant industry, it is required that a gas generating agent in an inflator not be decomposed even after standing at 107°C for 400 hours! For the reason, too, the citric acid propellants of Timmerman cannot be taken as

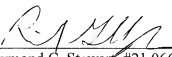
relevant to the compositions of the present invention.

Should there be any outstanding issues to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned by telephone at the number listed below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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